

CLAIMS

1. A method of improved resource arbitration, the method comprising the steps of:

defining four priority classes, managed high (MH),
5 managed low (ML), opportunistic high (OH), and opportunistic low (OL), to access one or more resources;

assigning a priority class to each resource access request;

10 creating an access request concentrator (ARC) for each resource, through which each resource is accessed;

choosing a resource access request at each ARC using the priority order MH, ML, OH, and OL, in decreasing order of priority;

15 determining whether OH priority class resource access requests are locked out;

upon a determination that OH priority class resource access requests are locked out, temporarily changing the priority order to OH, OL, MH, and ML, in decreasing order of priority;

20 determining whether OL priority class resource access requests are locked out; and

upon a determination that OL priority class resource access requests are locked out, temporarily changing the priority order to MH, OL, OH, and ML, in decreasing order of
25 priority.

2. The method of Claim 1, wherein the access request concentrator comprises at least one arbitration point.

3. The method of Claim 2, wherein the resource being arbitrated is bandwidth.

4. The method of Claim 3, wherein the resource access
5 request is a command.

5. The method of Claim 3, wherein the resource access request is a data component associated with a command.

10 6. A method of arbitrating a plurality of resource access requests, using at least one arbitration point, the method comprising the steps of:

dividing the resource access requests into subgroups;

arbitrating each subgroup using an arbitration point to
15 obtain a smaller set of resource access requests; and

repeating the above two steps for the smaller set of resource access requests until a single resource access request remains.

20 7. An apparatus for providing improved resource arbitration, the apparatus comprising:

means for defining four priority classes, managed high (MH), managed low (ML), opportunistic high (OH), and opportunistic low (OL), to access one or more resources;

25 means for assigning a priority class to each resource access request;

means for creating an access request concentrator (ARC) for each resource, through which each resource is accessed;

means for choosing an access request at each ARC using
30 the priority order MH, ML, OH, and OL, in decreasing order of priority;

means for determining whether OH priority class resource access requests are locked out;

upon a determination that OH priority class resource access requests are locked out, means for temporarily changing
5 the priority order to OH, OL, MH, and ML, in decreasing order of priority;

means for determining whether OL priority class resource access requests are locked out; and

upon a determination that OL priority class resource
10 access requests are locked out, means for temporarily changing the priority order to MH, OL, OH, and ML, in decreasing order of priority.

8. The apparatus of Claim 7 wherein the access request
15 concentrator comprises at least one arbitration point.

9. The apparatus of Claim 8 wherein the resource being arbitrated is bandwidth.

20 10. The apparatus of Claim 9 wherein the resource access request is a command.

11. The apparatus of Claim 9 wherein the resource access request is a data component associated with a command.

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12. An apparatus for arbitrating a plurality of resource access requests, using at least one arbitration point, the apparatus comprising:

means for dividing the resource access requests into
30 subgroups;

means for arbitrating each subgroup using an arbitration

point to obtain a smaller set of resource access requests; and
means for repeating the above two steps for the smaller
set of resource access requests until a single resource access
request remains.

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13. A computer program product for providing improved
resource arbitration, the computer program product having a
medium with a computer program embodied thereon, the computer
program comprising:

10 computer program code for defining four priority classes,
managed high (MH), managed low (ML), opportunistic high (OH),
and opportunistic low (OL), to access one or more resources;

computer program code for assigning a priority class to
each resource access request;

15 computer program code for creating an access request
concentrator (ARC) for each resource, through which each
resource is accessed;

computer program code for choosing an access request at
each ARC using the priority order MH, ML, OH, and OL, in
20 decreasing order of priority;

computer program code for determining whether OH priority
class resource access requests are locked out;

upon a determination that OH priority class resource
access requests are locked out, computer program code for
25 temporarily changing the priority order to OH, OL, MH, and ML,
in decreasing order of priority;

computer program code for determining whether OL priority
class resource access requests are locked out; and

upon a determination that OL priority class resource
30 access requests are locked out, computer program code for
temporarily changing the priority order to MH, OL, OH, and ML,

in decreasing order of priority.

14. The computer program product of Claim 13 wherein the
access request concentrator comprises at least one arbitration
5 point.

15. The computer program product of Claim 14 wherein the
resource being arbitrated is bandwidth.

10 16. The computer program product of Claim 15 wherein the
resource access request is a command.

17. The computer program product of Claim 15 wherein the
resource access request is a data component associated with a
15 command.

18. A computer program product for arbitrating a
plurality of resource access requests, using at least one
arbitration point, the computer program product having a
20 medium with a computer program embodied thereon, the computer
program comprising:

computer program code for dividing the resource access
requests into subgroups;

computer program code for arbitrating each subgroup using
25 an arbitration point to obtain a smaller set of resource
access requests; and

computer program code for repeating the above two steps
for the smaller set of resource access requests until a single
resource access request remains.

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